# MEASURING IMPACT: A METHODOLOGY TO INFORM TRANSFORMATIVE PROJECT DESIGN

SEPTEMBER 2022

FORUM FOR THE FUTURE

Capgemini

# ABOUT THIS REPORT

This report was written in partnership between Forum for the Future and Capgemini to stimulate an important debate about how professional services companies and other organisations working to deliver sustainability outcomes for their clients or partners can meaningfully measure these outcomes (initially in terms of carbon impacts). It introduces a methodology for calculating these outcomes on a client's or partner's greenhouse gas emissions. It can be used either at the end of a project or during the project design phase. The following chapters set out a vision, a set of principles, and the steps required in applying the methodology when delivering sustainability focused projects designed to lower carbon emissions, and ultimately help to create a net zero carbon economy.

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# EXECUTIVE SUMMARY

With the impacts of climate change becoming more frequent, more severe and more widespread, increasing numbers of organisations around the world are responding to these challenges by raising their sustainability ambitions and implementing deep carbon cuts in line with the demands of the Paris Agreement to limit global heating to less than 1.5˚C above pre-industrial levels.

Over the past two decades, significant progress has been made in the emerging discipline of carbon accounting with most large organisations calculating and reporting their carbon impacts using the accounting techniques based upon the Greenhouse Gas (GHG) Protocol. Whilst across Scopes 1, 2 and 3, the Protocol provides a comprehensive framework for assessing the operational and value chain carbon impacts of an organisation, one limitation remains – namely, how should an organisation measure the GHG reduction impact of a project specifically designed to reduce a client's or partner's GHG impacts?

The reality for most professional services organisations engaged in supporting their clients' business transformations, whatever their scale, is that the GHG reduction impact that they can have with their clients can potentially be hundreds of times their own operational footprints. Consequently, whilst not in any way diminishing the imperative for such organisations to reduce their own operational emissions, it is critical that organisations have a robust mechanism for measuring the impact they affect with their clients.

Ultimately, these impacts should be integrated into the understanding of their GHG tracking. Understanding GHG impacts should be set in the wider context of the implications of reductions: the positive environmental and social impacts that an effective sustainability or environmental, social and governance (ESG) strategy can deliver.

This report sets out the thinking of both Forum for the Future and Capgemini on this important topic. It is centred around the methodology for measuring the impact of sustainability projects, which is brought to life both through the principles that underpin the methodology and a range of practical real-life examples.

This report is not intended to be definitive; instead, the intention is to provide greater guidance to organisations delivering sustainability projects for measuring the carbon impacts of their projects. Through the sharing of the GHG Impact Methodology, the report aims to enable more accurate and meaningful decision-making during the project design phase as well as providing an accurate impact calculation at the end of a project.

*"For more than 25 years, Forum for the Future, using systems change and futures expertise, has worked in partnership with ambitious businesses, governments and civil society to accelerate the transformation to a just and regenerative future. This in turn requires wholesale systems transformation, with rapid and urgent decarbonisation a critical milestone in this journey. Yet when it comes to measuring and reducing emissions, the tools and guidance we need are still catching up with the desire for action. This is particularly true for the professional services industry, whose products and services have the potential to radically shift their clients to net zero and beyond. The GHG Impact Methodology has been designed to unlock this potential by measuring these carbon impacts, as well as future carbon impacts while projects are still in the design phase. By stimulating better decision making today, we can create a better tomorrow."*

***- Dr Sally Uren OBE***
***Chief Executive Officer, Forum for the Future***

*"As a global leader in consulting, technology and engineering services, Capgemini has been using its capabilities and expertise to support clients address their most pressing sustainability challenges for many years. Alongside our own operational reduction commitments (Capgemini was one of the first organisations to set targets validated by the SBTi back in 2016); we have committed to a quantitative target to help our clients save their carbon emissions. The investment in this report with Forum for the Future is a crucial part in ensuring that we can measure these carbon savings in an authentic, transparent and auditable manner."*

***- Cyril Garcia***
***Director of Capgemini Invent, Sectors and Corporate Social Responsibility***

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# 01 INTRODUCTION

# 2022 AT A GLANCE

With the impacts of climate change intensifying, it is critical that companies consider not only their operational carbon emissions but those within their wider influence to create a just and regenerative future.

The adverse effects of climate change are increasingly impacting our planet and its inhabitants through extensive flooding, heatwaves, droughts and wildfires. Climate change and its related impacts have featured in the World Economic Forum's top five Global Risks Report[1] every year since 2011. According to the New Climate Economics Index conducted by the Swiss Re Institute, between 4% and 18% of the global GDP will be lost due to the impacts of climate change, pending the extent of action taken.[2]

One of the main contributors to climate change are greenhouse gases (GHG), of which CO2 is the major component. Global warming, resulting from anthropogenic activity discharging or emitting pollutant gases into the air and atmosphere, is now both universally accepted and accelerating. To mitigate the effects of climate change, and more importantly to limit the magnitude or rate of global warming and its related effects, atmospheric concentrations of GHG must be rapidly stabilised, and ultimately reduced, to a level that will prevent further climate instability.

There is no denying that we are at a pivotal moment in history, with the future of humanity and the planet at a critical turning point. With multiple disruptions happening around us, it is important to pause and ask how we can harness this growing urgency to support a sustainable, positive transformation in the way that we operate. As Forum for the Future's recent 'Future of Sustainability' campaign stated, "while significant progress has been made, more than three decades of sustainability have not got us to where we need to be."[3] It is clear that we have a long road ahead of us where we must transform our systems, technologies and structures.[4] We can all agree that there is an urgent need to transform the way we act.

Businesses are constantly looking at pathways to reduce and avoid negative impacts, and seeking to actively generate positive social and environmental impact. Including a strong focus on tackling their Scope 3, alongside their Scope 1 and 2 emissions. Transparency and accuracy surrounding Scope 3 emissions measurement is notoriously difficult to achieve, but a fundamental necessity to inform how to better focus resources to ensure the maximum positive impact.

However, given the scale of the climate crisis, business need to go beyond the boundaries of traditional carbon accounting and consider how they can help clients reduce their own Scope 1, 2 and 3 GHG emissions. For professional services organisations, this goes well beyond measuring their downstream emissions (Scope 3 categories 9 to 15) in the Greenhouse Gas Protocol's Technical Guidance for Calculating Scope 3 Emissions[5], to quantifying the much greater impacts that their projects can have on their clients' overall emissions.

The GHG Impact Methodology set out in this report enables the calculation of these impacts and can positively impact decision making. Empowering people to optimise business projects to maximise their sustainability impact. It is hoped that by making this methodology publicly available, other companies and organisations can contribute to the evolution of thinking in this critical arena. Approaches such as the GHG Impact Methodology have the potential to enable us to transform decision making and how we consider emissions when designing projects.

# LOOKING THROUGH A NEW LENS

For well over two decades, driven largely by the World Resources Institute (WRI) and World Business Council for Sustainable Development's (WBCSD) GHG Protocol as well as CDP (formerly the Carbon Disclosure Project), organisations have been measuring their own carbon impacts with increasing completeness and accuracy. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard[6] has helped push towards increasingly robust and consistent approaches, particularly when it comes to Scope 1 and 2 measurement. Reporting on value chain Scope 3 emissions has historically lagged, but there are positive signs that both the number of organisations reporting, and the breadth of coverage is improving.

However, a gap still remains in carbon accounting – namely, the measurement and reporting of the carbon impacts of projects designed to reduce another organisation's carbon emissions. Whilst the GHG Protocol for Project Accounting[7] and sector specific methodologies exist, very few companies have adopted these. The GHG Impact Methodology set out in this report draws on previous approaches and was developed to encourage such project impact reporting. It is designed to provide simple guidance to enable organisations to calculate the carbon ($CO_2e$) impacts of projects they are implementing for their clients or partners.

Furthermore, through developing this approach, the methodology also enables the consideration of future carbon impacts – creating a foresight approach enabling transformative decision making from the outset of the project design with different decisions being modelled.

Typically, organisational carbon emissions are calculated retrospectively at the end of an agreed reporting period, or occasionally at the end of specific projects. However, employing a methodology able to calculate the project's likely emission impacts enables decision makers to make more informed strategic project decisions. For example, if a professional services firm puts forward two project designs for its client to decide between, the incorporation of likely carbon impact forecasting enables the client decision-makers to assess the alignment of the options to their sustainability goals.

Ultimately, many factors contribute to project design, and whilst decisions aren't made solely upon potential carbon impacts, with many companies now having GHG reduction targets, the ability to understand carbon impacts of potential projects is an important decision criteria to seriously consider.

Another challenge of standard carbon accounting and reporting practices is that they do not always encourage the consideration of potential unintended carbon effects of projects. The futures applicability of this methodology encourages this mindset as it has the potential to identify inadvertent social and/or environmental project impacts that decision-makers might not otherwise consider.

For example, a project designed to achieve zero non-hazardous waste to landfill, typically includes actions at the four waste management stages of reduce, reuse, recycle and energy recovery. However, research has shown that unless the volume of hard-to-recycle plastics sent to incinerators for energy recovery significantly reduces, energy generated from plastics incineration will become more carbon-intensive than sending non-hazardous waste to landfill by 2035 in the UK[8], as well as being a major source of air pollution.

Assessing the full likely carbon impacts of a project during its design stage increases the potential for such blind spots to be highlighted to decision-makers and related action to be taken.

# 02

# THE GREENHOUSE GAS IMPACT METHODOLOGY

# A DEEP DIVE

The GHG Impact Methodology provides a five-step approach for calculating the carbon impact of projects. The steps below should be applied sequentially and are explained further in the following sections. Moreover, the final step pertaining to reporting of the GHG emissions identified is covered in the auditing and transparency section.

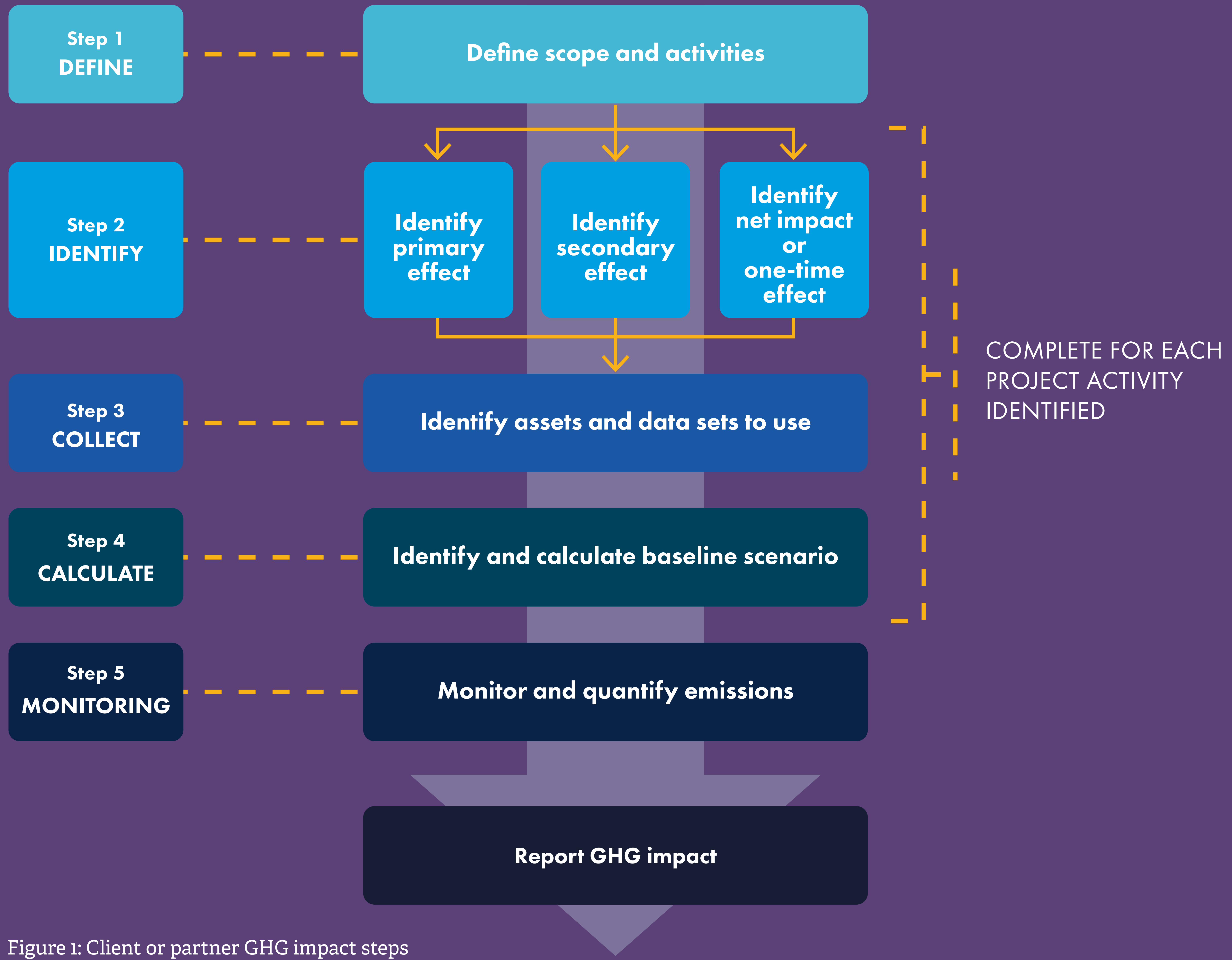



Figure 1: Client or partner GHG impact steps

# STEP 1: DEFINE
## UNDERSTANDING THE CARBON LEVERS FOR A PROJECT

In order to quantify CO2e emissions for any given project, it is first necessary to define its scope of potential impacts. This requires an assessment of the potential carbon emissions associated with the project, both in terms of the 'baseline' (the current situation) and 'predicted' (post-project or transformation) as well as the carbon associated with delivering the project.

The project should be considered in terms of activities that could impact CO2e emissions both positively and/or negatively. These calculations become the building blocks for creating the final GHG impact report. Practically, this should start by considering the macro-level impact for the project.

The table here illustrates the potential macro-level impacts for a number of IT transformation projects for a client.

### PROJECT ACTIVITY DEFINITION

| Potential positive carbon levers (Emission reductions) | Potential negative carbon levers (Emissions increases) |
|---|---|
| Solution allows the client to implement virtual delivery models enabling employees to work at home – **potential reductions in office energy** (client's Scope 1 and 2 emissions) and **reduction in employee commuting** (client's Scope 3 emissions) | "Need to consider the indirect impacts of reducing commuting – employees working at home will use domestic energy (client's Scope 3 emissions – if measured) including the carbon impact of the solution – embedded carbon in new IT equipment as well as required network and datacentre infrastructure (both client's Scope 3 emissions) |
| Solution migrates client's IT Infrastructure from a standalone equipment running in their office to virtualised cloud solution in supplier datacentre – **reductions in office electricity** (client's Scope 2 emissions) | Need to consider the emissions associated with the supplier's cloud infrastructure such as energy in datacentre and embedded carbon in IT equipment (both would be client's Scope 3 emissions) |
| Solution replaces less energy efficient IT hardware (for example: laptops, desktops, monitors) with new low energy devices – **reductions in office electricity** (client's Scope 2 emissions) and **potentially working from home emissions** (client's Scope 3 emissions if measured) | Need to consider the embedded carbon associated with the replacement devices (Scope 3 purchased goods and services emissions) |
| Solution digitises invoicing process reducing need for printed invoices – **reduction in paper and postage** (Scope 3 emissions) as well as **electricity** to print (Scope 2 emissions) | Need to consider the embedded and operational emissions of the IT solution – embedded emissions in equipment and electricity to run (Scope 3 and 2 emissions respectively) |

**Table 1: Potential carbon emission impacts from selection of IT transformation projects**

The impacts identified in the macro-level scan will form the basis of the scope for the CO2e project accounting. It is critical, for the credibility of the process, that emissions across all Scopes (Scopes 1 and 2 as well Scope 3 – both upstream and downstream) are included in the assessment process. Being selective and excluding material carbon emissions categories will undermine the validity and usefulness of the process.

This project accounting can be considered in three stages:

1. The estimation of the projected CO2e emission impacts at proposal stage to support the client's decision making process

2. The monitoring of the project throughout its life to ensure projected benefits are delivered

3. At the end of the project to allow for transparent reporting.

# STEP 2: IDENTIFY
## DELINEATING THE EFFECTS OF THE PROJECT

Once the potential carbon levers of the project have been clearly defined, it is necessary to identify the primary and secondary effects associated with each activity within the project. This enables the transparent reporting of the project impact including any negative secondary effects. These unintended carbon consequences are often overlooked while focusing on the identified positive emissions impacts.

### Primary effects

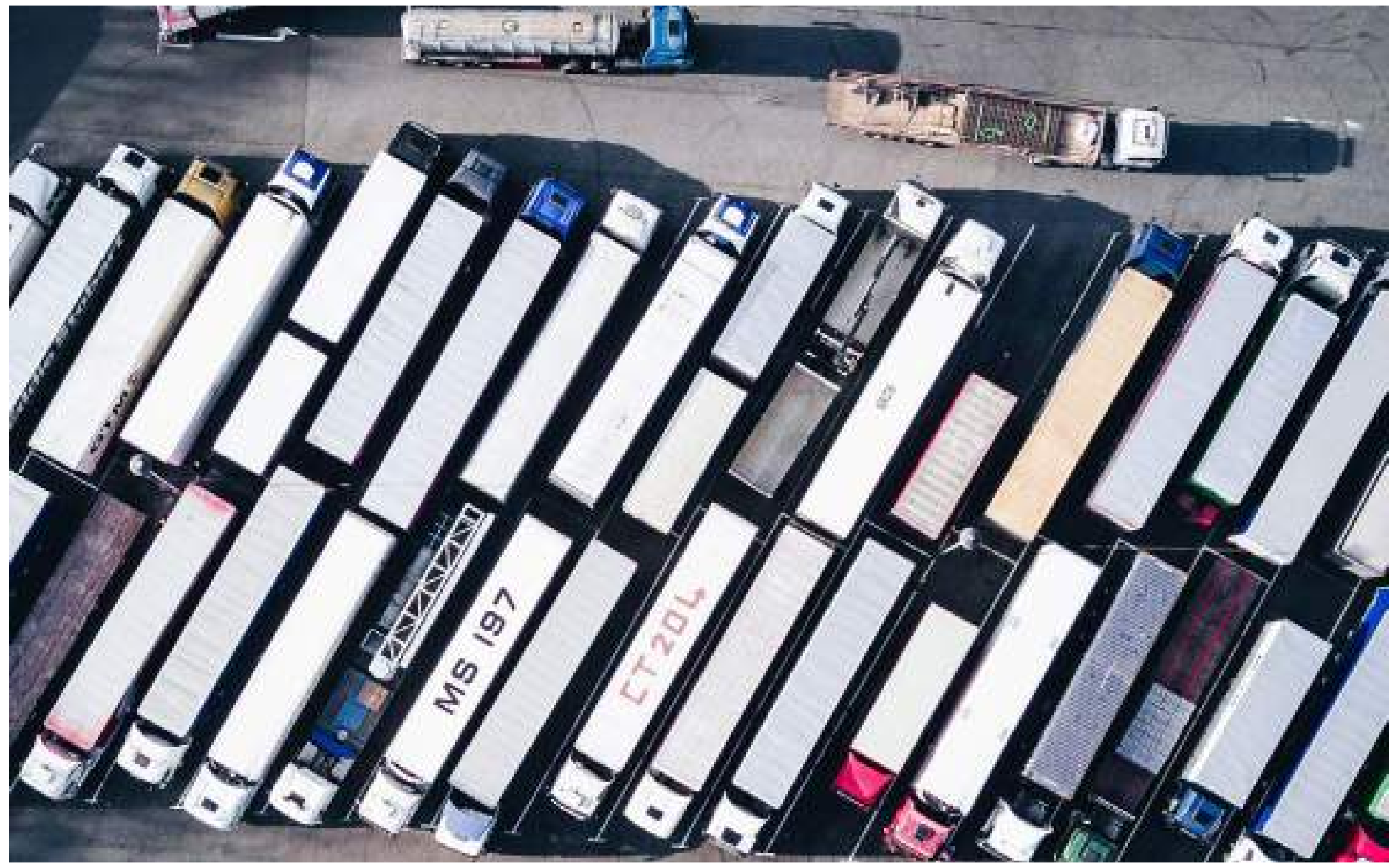
Primary effects are the result of a given activity aimed at reducing GHG emissions through carbon reduction, storage or sequestration. Moreover, each activity identified would most likely only have one primary effect. The Greenhouse Gas Protocol for Project Accounting[9] has classified primary effects into five categories, which are:

1. Reduction in combustion emissions from generating grid-connected electricity
2. Reduction in combustion emissions from generating energy or off-grid electricity, or from flaring
3. Reductions in industrial process emissions from a change in industrial activities or management practices
4. Reductions in fugitive emissions
5. Reductions in waste emissions

These categories are applicable to many sectors, including technology, and can be used for the purpose of calculating emission impacts. It is recommended that for any given project, the associated primary effect for each activity is identified. These effects should be measured across the project timeline from design, through to delivery and end of the project.

### EXAMPLE: FLEET LOGISTICS

An activity could be optimising the routing for a logistics company's fleet of lorries resulting in the saving of diesel fuel burnt. The primary effect of this activity would be a reduction in combustion emissions associated with running the fleet.



## Secondary effects

Secondary effects are all other effects associated with a given activity – and these can be both negative (an increase) and positive (a reduction) in terms of CO2e emissions. As a general rule, if in doubt about the secondary CO2e impacts of activities, it is advisable to underestimate the carbon benefits of the project.

Secondary effects can be derivatives of the activities, can be directly linked to an activity or could also be associated with activities outside of the project's direct sphere of influence, resulting in changes in GHG emissions elsewhere in the client's operations or value chain.

### EXAMPLE: FLEET LOGISTICS (CONTINUED)

One positive secondary carbon effect from the lorry routing project described above could be prolongation of the fleet's life, reducing the need for lorry replacement with the embedded carbon associated with purchasing new vehicles. Another positive secondary effect could be reduced non-GHG emissions (such as particulates) reducing urban pollution. Finally, negative secondary effects should also be considered, if the company uses the improved routing to makes more delivers each day, the fuel burnt and carbon saving may be reduced.

Whilst often secondary effects are smaller than primary effects, they require identification and careful consideration when defining project boundaries so as not to over-estimate positive carbon benefits. Ultimately, secondary effects could render the project having either neutral CO2e impacts or in extreme cases being additive to the client's carbon footprint.

In some specific instances, the positive secondary effects could actually be larger than the primary effects; consider the case of domestic smart meters.

### EXAMPLE: DOMESTIC SMART METERS

An activity could be implementing domestic smart meters. Whilst the primary effect of the meters removes the need for the energy company to send out meter readers, secondary effects could include the consumer's ability to lower their energy consumption through the insights provided by the meter. These energy savings could easily be larger than the fuel savings associated with sending out the meter reader.

In some situations, particularly when the project involves the deployment of significant infrastructure, conducting a Life Cycle Analysis (LCA) can help to identify and quantify full carbon effects. A full LCA, whilst not a trivial exercise, can provide useful insights in determining the full upstream and downstream emissions associated with a project.

Calculating secondary effects is not always straight forward, especially when calculating projected benefits at the outset of a project. If in doubt about secondary effects, it is always advisable to underestimate the GHG benefit of the project and its activities.

## One-time effects

One-time effects are a special class of secondary effects which occur during the deployment phase of the project. One-off GHG emissions generated might be unrelated to the activity's primary effects but must be accounted for if the complete carbon impact of the project is to be presented.

### EXAMPLE: DOMESTIC SMART METERS (CONTINUED)

During the deployment phase of the domestic smart metering project, engineers will be required to visit each household to deploy the meter – the carbon emissions associated with the visits needs to be accounted for. In addition, there will be embedded carbon associated with the IT solution which needs to be included.

# STEP 3: COLLECT
# DATA IDENTIFICATION

In order to make the carbon impacts calculations, it is necessary to identify appropriate data sets. The data and information gathered must be compiled systematically to ensure credibility and transparency.

## Data identification

The data to be used in conjunction with calculating the carbon impacts from a project requires a systematic approach. Additionally, in some cases, the collection of the required data may require the cooperation and support of the client if the most accurate assessment is to be made.

As mentioned in the previous section, each activity will have a primary effect, and possibly secondary effects, and data will need to be identified in each case.

Appropriate GHG emission conversion factors will also need to be identified to support the calculation. In the UK, the most commonly used conversation factors are the Government conversion factors for company reporting of greenhouse gas emissions provided by the Department for Business, Energy & Industrial Strategy (BEIS)[10].


## Typical data sets to select

| Resource | Metric or unit information required for the calculation | Conversion factors |
|---|---|---|
| Energy (gas, electricity, etc) | Kilowatt-hours (kWh) | Available from BEIS [11] |
| Water | Cubic meters | |
| Vehicle fuel (e.g., diesel or petrol) | Litres | |
| Material use (e.g., concrete, plasterboard, glass, etc) | Weight | |

**Table 2: Typical data sets**

In reality, data and conversions factors are not always easily available. Often proxy measures will need to be employed and converted to emissions savings. In many cases, a company will know the amount of money spent on a business activity (e.g., rail travel), but not know the distance travelled. As the BEIS emissions factors for rail travel are based upon the passenger kilometres travelled, an estimation will need to be undertaken to transform the available spend data into distance. Likewise, securing conversion factors for every activity within a business can also be difficult and may require engagement with a carbon specialist.

# STEP 4: CALCULATE
## COMPUTING THE CARBON IMPACTS

Once all the necessary data and conversion factors have been identified relating to all the activities, the carbon impact of the project can be calculated.

With many projects it will be necessary to produce both a business-as-usual (baseline) calculation (the carbon impact of business as usual assuming the project doesn't go ahead) and then the carbon impact with the project implemented.

### EXAMPLE: IT TRANSFORMATION

In an IT transformation project which migrates IT servers from the client's site into an efficient cloud-based solution employing renewal energy, the carbon impact of running the existing solution must be calculated alongside the carbon impact of implementing and running the proposed new solution. The carbon benefit is calculated by comparing the emissions for the business-as-usual scenario to those from the proposed solution.

### Observation on the baseline calculation

When calculating the emissions relating to the baseline (business-as-usual) scenario, it is critical to base the calculations based upon the best available knowledge. Where assumptions are employed, they should be clearly documented so that they can be discussed and validated with the client and then adjusted if necessary. The baseline needs to reflect the conditions that would exist in the absence of the implementation of the activities. That is to say, the baseline scenario equates to the continuation of the client's current business activities without the project. It should also be noted that the baseline scenario might not be static, and this needs to be reflected in the calculation.

### EXAMPLE: IT TRANSFORMATION (CONTINUED)

In the case of the IT transformation project described on the left, if the client was planning to migrate their electricity supply to a renewable source in the next three months, then the baseline calculations would need to reflect this change. In this scenario, the likely carbon reduction benefits of the solution would be dramatically reduced as the emissions associated with the baseline would be significantly lower.

When creating a dynamic (non-static) view of the baseline scenario, there are a wider range of factors that need to be considered. Some examples might include:

- Natural decarbonisation over time – without any input from the client, many activities are decarbonising year after year. For example: cars, lorries, planes, etc are becoming more efficient; the electricity grid is employing increasing levels of renewable energy
- Changing demand patterns – demand for some products and services is declining each year, which will consequently drive down carbon in the baseline scenario
- Legislation may prohibit the future manufacture of a product - consequently the baseline scenario may need to exclude carbon emissions related to the prohibited product.

Defining an accurate baseline scenario, and recognising that this might need to be a dynamic scenario, is central to being able to produce a credible and transparent carbon impact calculation.

## Calculating the project related carbon impacts

Once the carbon impact of the baseline scenario is calculated, the carbon impact of the proposed project can be computed. Essentially, this involves bringing together the outputs from Steps 2 (defining the effects) and 3 (identifying data sources and carbon conversation factors). Starting with the primary effects, the impact of each activity should be calculated. It is strongly recommended that detailed notes of the calculation and any associated assumptions should be created at this stage. This is particularly important if the organisation intends to have its calculations verified by a third party.

## Observation on the duration of carbon savings

One critical decision that must be made is the timeframe that potential carbon impacts should be projected – essentially how many months or years of reductions should meaningfully be forecast.

Consider our first example where a solution is implemented to optimise the routing for a logistics company's fleet of lorries resulting in the saving of diesel fuel burnt. How many years might it be valid to assume the carbon reduction impacts result from the optimisation solution? While there can be no fixed answer, it would seem sensible to take a conservate estimate and limit the benefit to three years. After this point, it is likely that future carbon savings might be being delivered through future carbon reduction initiatives (such as transitioning the fleet to biofuels or electricity). This is a key decision, and must be documented together with its rationale.

# STEP 5: MONITORING
## ONGOING ASSESSMENT OF THE PROJECT

Step 5 pertains to monitoring GHG emission impacts throughout the project implementation phase. To undertake this step, a project timeline must be created in order to monitor and quantify the evolution of carbon impacts compared to those initially estimated at the inception of the project.

For maximum visibility, it is recommended that GHG emissions impacts are calculated/reviewed at three key points during the project lifecycle:

1. **Design-stage:** calculations are made during the proposal phase prior to the client commissioning the project. Design-stage calculations are likely to be simplified to include only a limited number of key activities and are often based on assumptions. These calculations provide the client with the magnitude of GHG impact of the project being considered.

2. **Project kick-off:** more detailed calculations are completed using client inputs and will often involve validating and adjusting the assumptions made in the design-stage. The calculation will provide the benchmark for assessing the delivered project against.

3. **Project completion (and potentially interim milestone for larger programmes):** once the project has been implemented, calculations are made using monitored client data and compared to baseline calculations to assess the actual GHG.

A documented monitoring plan should also include all assumptions made, uncertainties observed, data sources and operating conditions during monitoring as well as the details of the conversion factors employed. Information pertaining to the technical requirements associated with monitoring data points should also be documented. For technology-based projects, this may include procedures for meter readings, calibration, and maintenance. Furthermore, it can be useful to store the data gathered for the monitoring plan alongside the data collected for each project activity (and its identified effects).

# REPORTING AND VALIDATING THE OUTPUTS

It is recommended that carbon reporting for projects should be done on project completion for shorter assignments and at least annually for major programmes. Whilst organisations will vary on what they will communicate publicly, the following list provides an aide memoire for what and when to report:

- Short description of the project
- Dates (start date of the GHG impact project, and the date when GHG reductions are first generated) together with a timeline for the project
- Geographic location of project
- GHG Impact Methodology version used
- Identification of each project activity and the associated effects identified
- List of all assets impacted within the activity (useful to asset details on make, model, location, physical or virtual, consumption)
- Expected operational life of the project

It is also useful to document the procedures followed to collect the data as well as assumptions used.

## Measuring the actual outcomes

Whilst a project's potential carbon impact can be estimated at the design or project kick-off phase, there is a strong possibility that the actual impacts will change during the delivery phase. This could be caused through:

- An intentional change in the project scope
- An unexpected situation impacting the implementation date, or
- A calculation assumption being proved incorrect during the project delivery phase.

As a result of the above, reviewing completed projects is important. For professional services organisations undertaking many projects delivering carbon reduction benefits, reviewing every assignment on completion may not be practical. To ensure a continued transparency of the carbon impacts projected, it is recommended that a two-stage approach to reviewing actual outcomes is employed whereby:

- All projects with a large carbon reduction impact (e.g., more than 50,000 tonnes $CO_2e$ per annum) should be reviewed
- For projects with smaller impacts (e.g., under 50,000 tonnes $CO_2e$ per annum), a random sample of 25% of projects should be reviewed.

This sampling frame should be reviewed over time and the thresholds and proportion of smaller projects reviewed adjusted if accuracy rates are good.

The purpose of the review is to ensure that:

- The original identified savings per annum are correct and still apply
- The proposed delivery date and scope of the project have not changed
- The project and or organisation is still in operation within the impact time period.

# 03

# THE SIX PRINCIPLES OF USE

# SIX PRINCIPLES FOR USING THE METHODOLOGY

Methodologies, such as the GHG Impact Methodology described in the previous section, are essentially value neutral. However, there is always the temptation to want to maximise the positive impacts whilst overlooking (or minimising) the negative impacts. Consequently, to ensure that the methodology is used authentically, Forum for the Future and Capgemini recommend following the six principles set out in the GHG Protocol for Project Accounting are applied.

## The six key principles[12]:

1. **Relevance:** Use data, methods, criteria, and assumptions that are appropriate for the intended use of reported information

2. **Completeness:** Consider all relevant information that may affect the accounting and quantification of GHG reductions, and complete all requirements

3. **Consistency:** Use data, methods, criteria, and assumptions that allow meaningful and valid comparisons

4. **Transparency:** Provide clear and sufficient information for reviewers to assess the credibility and reliability of GHG reduction claims

5. **Accuracy:** Reduce uncertainties as much as is practical

6. **Conservativeness:** Use conservative assumptions, values, and procedures when uncertainty is high

By applying these principles and using the GHG Impact Methodology set out in this report, it is hoped that the calculating of project GHG impacts can become the norm across the professional services industry and organisations providing sustainability solutions.

The methodology is designed to help clients and partners to drive genuine change by providing accurate and transparent insights about the potential carbon impacts of transformation initiatives. When employed as a foresight approach during project design, it can also enable better decisions potentially avoiding inadvertent secondary carbon effect emissions.

The GHG Impact Methodology has been refined by Capgemini over a number of years whilst trying to authentically understand and communicate the wider carbon impacts of the transformation projects it delivers to clients. After an initial phase of investigating existing methodologies, an initial methodology was developed encompassing the core principles described above.

This initial approach has subsequently been challenged by both internal and external experts. Based on these inputs, and with the support of Forum of the Future, this report shares the latest draft of the methodology for further external debate and development.

# 04 BRINGING THE METHODOLOGY TO LIFE

# CASE STUDIES

This section presents three client case studies from Capgemini that cover the transformation of IT, business operations and the supply chain. Each example aims to demonstrate how the methodology can be applied by providing a brief overview of the solution, the business outcome and the environmental outcome.

## CASE STUDY 1: IT TRANSFORMATION

In this example, the rationalisation of a client's over-complex IT estate enabled significant cost efficiency savings together with carbon savings.

### Solution

Streamlining the legacy IT infrastructure of a Telco client, which had become complex and inefficient due to various business acquisitions. The project undertook to both migrate, as well as decommission, old applications which were a result of the client's acquisitions.

### Business outcome

The organisation achieved a 50% reduction in its legacy applications in just 18 months. The project migrated from 750 to 450 systems with the use of virtualised servers increased by 25%, resulting in significantly reduced IT support energy costs. As a result of this success, the client is planning a further 50% reduction in application.

### Environmental outcome

Primarily due to the energy savings related to the legacy architecture (both direct electricity consumption for the servers and also for the air conditioning systems to keep the equipment cool). The project led to direct carbon savings of 108 tonnes $CO_2e$ per year for the client, and the new IT architecture also has the potential to drive further environmental.

Implementing new technology solutions can both reduce the operational impacts of the IT estate as well as providing a platform for wider carbon reduction across an organisation. Frequently IT transformation involves decommissioning older, less energy efficiency standalone systems and transitioning applications to outsourced cloud-based environments. In the example above, the carbon benefit comes from the transition to a modern environment. In other cases, the carbon benefit would be derived from broader operational carbon savings whilst the footprint of the IT estate might increase.

## CASE STUDY 2: BUSINESS OPERATIONS

In this example, a combination of technology solutions enabled a supermarket to significantly reduce fuel burn and carbon emissions from within its fleet of lorries.

### Solution

A supermarket chain required a solution to reduce the fuel consumption of its fleet of lorries. Through leveraging two different technology platforms, a solution was deployed which both optimised routing and encouraged more fuel efficient driver behaviour.

### Business outcome

The core business aim for this project was to reduce the fuel costs by £1.3m per year. In addition to these savings, the solution also enabled the lowering of maintenance costs, faster deliveries, and more accurate performance tracking.

### Environmental outcome

The solution delivered annual carbon reductions of circa 3,500 tonnes CO2e per year (primarily associated with the reduced fuel consumption). In addition, the project provided additional benefits such as the reduction of other pollutants (such as NOx and SOx emissions) and the reduction in maintenance schedules reducing embodied carbon associated with spare parts. At the time, reductions were not quantified for the client.

Whilst emphasis is often placed upon the direct impact of implementing technology-based changes, often solutions can be leveraged to deliver a wide range of additional benefits. Although the implementation of the new technology solution has an environmental impact which needs to be acknowledged, as shown in this case example, the broader savings can significantly outweigh the impact of the technology solution.

## CASE STUDY 3: SUPPLY CHAIN

In this example, the development of a new sustainable packaging strategy delivered both plastics and carbon savings.

### Solution

A food retailer required support defining and implementing a its new sustainable packaging strategy. Their operating model was realigned to anchor sustainable packaging practices within the client's organisational model and its processes.

### Business Outcome

Having clear overarching goals and sub-targets with measurable ambitions and precise time horizons helped the client deliver a significant reduction in plastic packaging. The project also included the introduction of key transparency metrics such as tonnes of plastic saved.

### Environmental Outcome

The project contributed towards the delivery of the organisation's ambition of converting all private label packaging to a more sustainable alternative and also achieved a double-digit percentage reduction in plastic waste. In addition, the optimisation of more than 1,250 items led to the saving of 7,650 tonnes of plastic per year with an associated carbon saving of 31,060 tonnes CO2e per year.

In many cases, Scope 3 emissions are by far the largest contributor to global emissions. It is in these situations where technology and transformation can often have the most significant impacts. Although organisations often don't have direct control over these GHG impacts, they often have the ability to indirectly influence them as is seen in this example.

# 05

# CAPGEMINI’S CARBON IMPACT CALCULATOR

# CAPGEMINI'S CARBON IMPACT CALCULATOR

Every project has an impact. Whether through individuals commuting to the office, travelling for business or even working at home, carbon emissions are generated through travel, energy use and the consumption of materials. Whilst the methodology set out in this report provides a logical framework for identifying the carbon emissions associated with an individual project, systematically calculating the impacts for hundreds or even thousands of projects could become extremely time consuming.

To address this challenge, Capgemini has implemented its Client Carbon Impact Calculator which helps to automate the application of the GHG Impact Methodology described in this report.

Initially deployed to fill a gap with the ability to calculate the carbon associated across a small number of key levers, the web-based app continues to be expanded to include additional functionality. Some key carbon levers already deployed include commodities such as water, paper, plastics, and data centres, together with fuels such as gas and electricity. Travel emissions can also be modelled within the app.

Capgemini has started to make the app-based calculator available to their client-facing teams to enable the application of the GHG Impact Methodology during the design phase of projects. Client teams also have the ability to use the calculator with clients to help explain the potential carbon impacts of projects, and to explore how different delivery options (e.g., remote vs. off-site) can impact the overall carbon savings.

The deployment of the calculator allows project teams to pilot at scale and in real-life the carbon savings measurement following the GHG Impact Methodology; this application addresses a short-term gap, and opens the door to further enhancements and collaboration with partners.

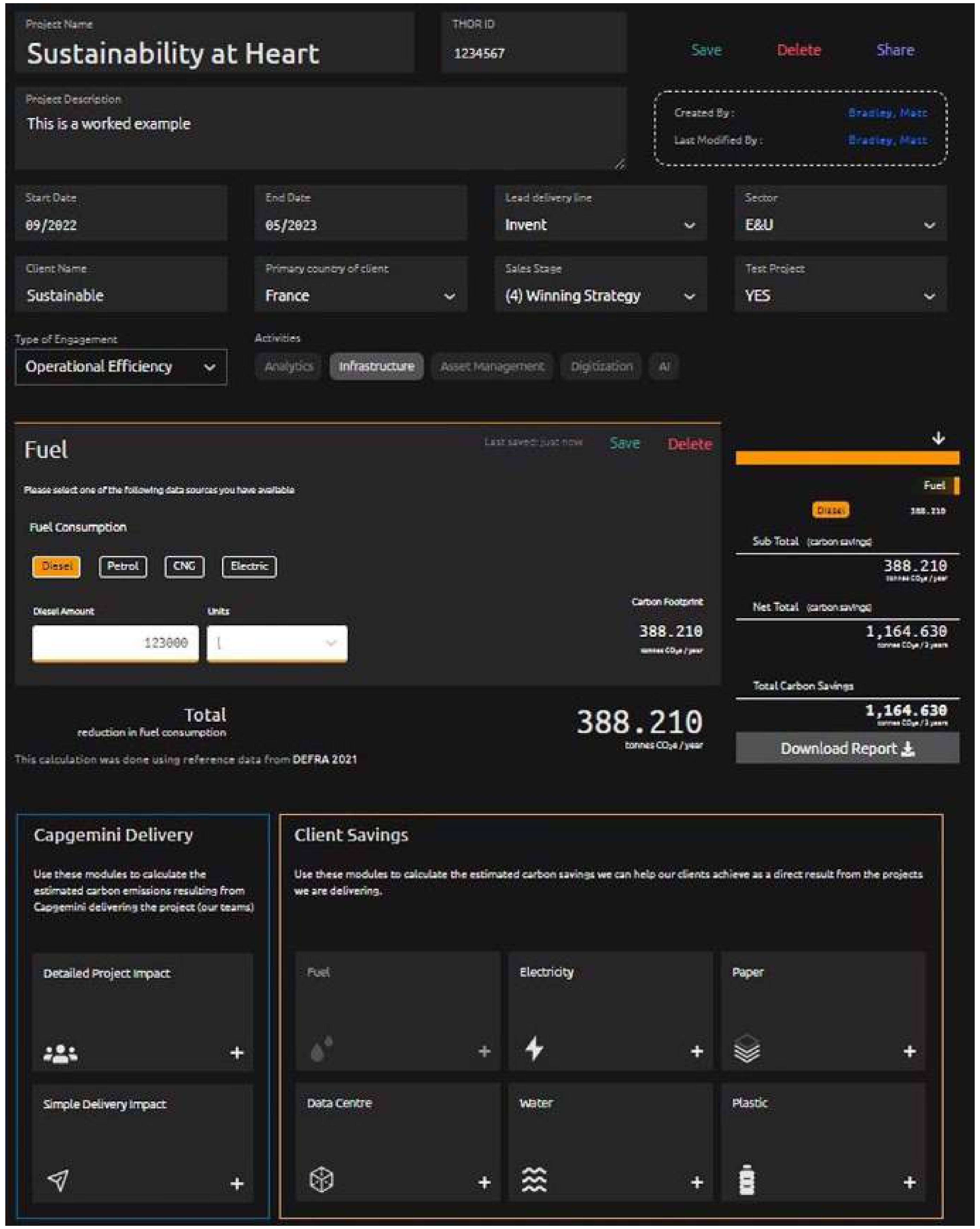



Figure 2: Capgemini's Client Carbon Impact Calculator

# 06

# WHAT HAVE WE LEARNT SO FAR?

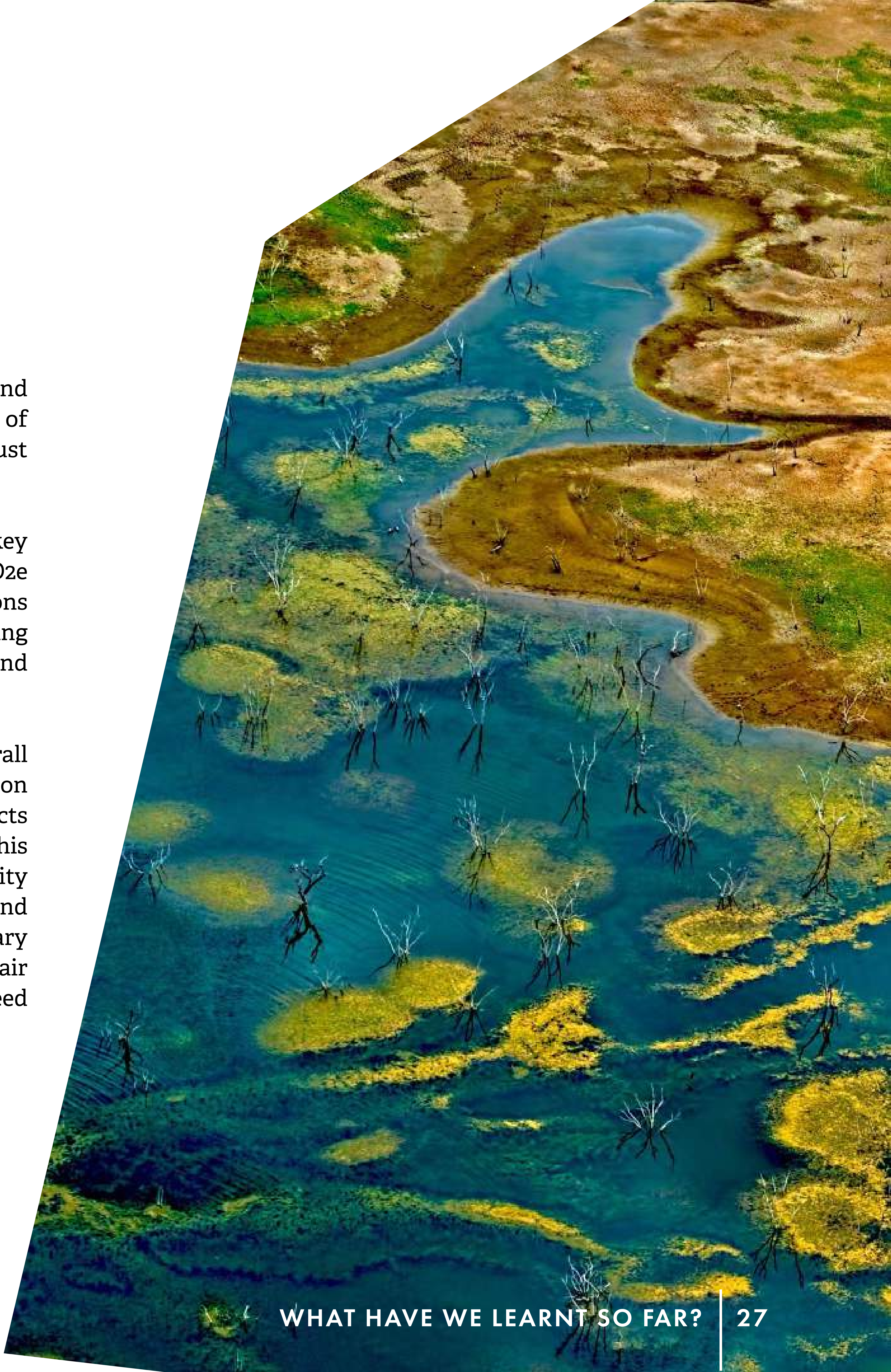
# WHAT HAVE WE LEARNT SO FAR?

Calculating the potential GHG impacts for projects can make an important contribution to the decision-making process, and in some situations can lead to the avoidance of significant unintended secondary carbon effects. Having a logical and consistent approach to measuring these carbon impacts (whether positive or negative) is critical if optimal carbon decisions are to be made. Through the development of both the GHG Impact Methodology and also Capgemini's Client Carbon Impact Calculator, there have been many learnings. It is acknowledged in their current forms, neither are the silver bullet to provide answers to every potential sustainability trade-off decision. However, it is hoped that the report at least starts a deeper conversation about the transparent quantification, measurement and reporting of the carbon savings related to client and partner projects.

Some of the lessons we have learnt so far have included:

- At present, there is no single globally recognised GHG impact methodology, which makes it difficult for companies to understand the carbon impacts of potential projects, and to compare potential supplier approaches
- Datasets (such as conversation factors) are often difficult to find and are widely created in English, excluding a large proportion of the global population. Ultimately, reducing carbon emissions must be a global endeavour so inclusion and accessibility is critical
- Ensuring we follow up with a systemic approach remains the key challenge – perhaps as important as initially measuring the $CO_2e$ emissions. This may require capacity building across organisations to ensure a systemic lens along with long-term thinking covering the full spectrum of impacts across social, economic, and environmental considerations.

Furthermore, carbon data in itself can only reveal part of the overall sustainability situation. Consequently, whilst pursuing carbon reductions, it is important to also consider sustainability effects beyond carbon. The GHG Impact Methodology described in this report whilst making a valuable contribution to sustainability decision-making can only provide a certain level of insight and prompt more systemic thinking through considering secondary effects. In some situations, other sustainability factors (such as air or water pollution, or social justice and human rights) will also need to be taken into account.



# 07 CONCLUSION

# CONCLUSION

As previously stated, any approach comes with a set of limitations and challenges that must be acknowledged. The GHG Impact Methodology is a measurement and decision-making support approach which can provide valuable insights. Ultimately, it quantitatively describes the operating context and help to inform organisational decision-making. However, it will always be up to individuals to decide which projects are selected and how insights are implemented.

While the focus of this report has been on carbon emissions, it is critical to remember that creating a sustainable future that is both just and regenerative encompasses much more. It is about adaptation, social equity, ecosystems and resources, amongst many other inherently intertwined elements. Measuring and quantifying the impact of projects on these areas is also important, but is beyond the scope of this report. Related research that aims to support businesses to navigate developing and implementing just and regenerative strategies includes the Business Transformation Compass. This was developed by Forum for the Future in partnership with the World Business Council for Sustainable Development (WBCSD), with input from a number of leading global businesses[13].

The GHG Impact Methodology is just one approach to understanding the potential emissions impacts (both positive and negative) of transformation projects. While it is not a complete solution for every sustainability issue that society is facing, we believe that it can make a meaningful contribution to making informed carbon related decisions.

Individual actors or businesses alone cannot shift systems and address the impacts of climate change. Publicly sharing this methodology encourages more collaboration and synergies across the various sectors they operate in as we work towards trying to build a future fit world. Making the methodology publicly accessible will also allow for feedback which can lead to further improvements and wider adoption of such an approach. It can help organisations take action to create a better future and strategise accordingly. Such a futures-focused approach gives us the opportunity to create broader impacts on people and the environment whilst using a systemic lens.

While the focus of this report is on GHG emissions, creating a sustainable future that is both just and regenerative encompasses much more. It requires a systemic lens as mentioned above which allows us to radically tackle adaptation, social equity, ecosystems and resources, and resilience to name but a few elements while in tandem, coping with the growing climate crisis.

Join us as we explore questions around emissions, project design, technology, and the systemic challenges that lie ahead of us.

# APPENDIX

# APPENDIX

## Definitions

In this report, the following definitions apply:

| | |
|---|---|
| $CO_2$ | Carbon dioxide is a chemical compound occurring as a colourless gas with a density about 53% higher than that of dry air |
| $CO_2e$ | Carbon dioxide equivalent" or "CO2e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO2e signifies the amount of CO2 which would have the equivalent global warming impact |
| GHG | Greenhouse gas is a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are water vapour (H2O), carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and ozone (O3) |
| Paris Agreement | It is a legally binding agreement signed by 196 parties in 2015. The aim is to limit global warming to below 2°C, compared to pre-industrial levels |

| | |
|---|---|
| Scope 1, 2 and 3 Emissions | Emissions are classified into three categories:<br>• Scope 1 covers emissions from direct sources that are owned or controlled by the organisation<br>• Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating and cooling that are used by the organisation<br>• Scope 3 covers all other indirect emissions that occur in an organisation's value chain (both upstream and downstream) e.g., use of sold products, waste disposal, transportation |
| SOx | Sulphur oxide refers to many types of sulfur and oxygen containing compounds such as SO, SO2, SO3, S7O2, S6O2, S2O |
| NOx | Nitrogen oxide may refer to a binary compound of oxygen and nitrogen, or a mixture of such compounds |

# PARTNERSHIP DETAILS

This report was written and produced in partnership between Forum for the Future and Capgemini.

# ABOUT FORUM FOR THE FUTURE

Forum for the Future is a leading international sustainability non-profit. For more than 25 years we've been working in partnership with business, governments and civil society to accelerate the shift towards a just and regenerative future in which both people and the planet thrive.

As our environmental, social and economic crises intensify, the world is rapidly changing, with multiple transitions already reshaping how we all live and work. But will we go far enough, and fast enough? Forum is focused on enabling deep transformation in three game-changing areas: how we produce and consume food; how we produce energy; the role and impact of business in society. We're working with ambitious and diverse change- makers to shift how they feel, think, act and collaborate to drive systemic change for sustainability.

Find out more at www.forumforthefuture.org

# ABOUT CAPGEMINI

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 350,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2021 global revenues of €18 billion.

Find out more at www.capgemini.com

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**This report is part of Forum for the Future and Capgemini's ongoing collaboration, Beyond Greenhouse Gases.**

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